WHAT IS CLAIMED IS:

1   1.   A method of processing an incident signal within

2   a "RAKE" receiver with several fingers, comprising:

3   receiving the incident signal formed from symbols

4   output from at least one multi-path transmission channel

5   for which each path transports a delayed version of the

6   signal;

7   detecting paths for allocation to at least some

8   of the fingers;

9   combining the information output from each finger

10   assigned to a path within a memory capable of storing a

11   number of symbols larger than the maximum delay between the

12   paths and which can be addressed by address pointers

13   associated with the corresponding fingers including defined

14   first and last fingers, the combination step including:

15   pointing address pointers in a steady state phase

16   to addresses with mutual spacings taking account of mutual

17   delays in the number of symbols between the paths;

18   storing a current symbol received on the first

19   finger in the memory at the write address denoted by its

20   corresponding address pointer;

21   incrementing the address pointer; and

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22   before reception of the next symbol on this first

23   finger, extracting the contents of the memory stored at the

24   read addresses denoted by all the other address pointers

25   in sequence, summing these contents in sequence with the

26   symbols present on the other fingers, then storing these

27   sums, except for the sum corresponding to the last finger,

28   at the same read addresses before incrementing all the

29   other pointers, and delivering the last sum corresponding

30   to the last finger at the output from the receiver.

1   2. The method according to claim 1, wherein

2   combining comprises a transient phase in which initial

3   addresses of the address pointers are all equal to a same

4   initial value, and wherein the different fingers output

5   symbols progressively and at corresponding different

6   instants, and wherein the same processing is done in this

7   transient phase as is done in the steady state phase for

8   the fingers on which symbols are present.

1   3. The method according to claim 1, wherein

2   combining comprises a transient phase in which initial

3   addresses of the address pointers are predetermined taking

4   account of any differences in the number of symbols between

5   the paths, and wherein the same processing is done in this

6   transient phase as is done in the steady state phase,

7   except for delivering the last sum corresponding to the

8   last finger at the output from the receiver.

1   4.   The method according to claim 1, wherein each

2   symbol is composed of several chips, and a rate of the

3   combination step is controlled by a clock signal with a

4   period equal to the duration of one chip divided by a

5   predetermined number, and further including extracting the

6   memory contents denoted by a pointer during one cycle of

7   the clock signal and incrementing the pointer corresponding

8   to the next cycle.

1   5.   The method according to claim 1, wherein the

2   memory contents are used without initializing the memory

3   beforehand by adding zero to the value of the symbol on the

4   first finger before writing it in memory.

1   6.   The method according to claim 1, further

2   comprising resetting the contents of the memory located at

3   the address pointed to by the address pointer of the finger

4   that accesses this address before the other fingers to zero

5   when a symbol arrives on this finger.

1   7.   The method according to claim 1, wherein the

2   number of symbols that can be stored in the memory is equal

3   to the number of symbols corresponding to the maximum delay

4   between the paths, plus one.

1   8.   A "RAKE" receiver, comprising:

2   a signal input to receive an incident signal

3   formed from symbols output from at least one multi-path

4   transmission channel in which each path transports a

5   delayed version of the signal;

6   several fingers, each intended to demodulate a

7   given path at a given instant;

8   a control unit designed to detect and allocate

9   paths to at least some of the fingers; and

10   a combination unit connected to the output from

11   the fingers and designed to sum the information produced

12   at the output from each finger, the combination unit

13   comprising:

14   a memory capable of storing a number of symbols

15   corresponding to the maximum delay between the paths;

16   address   pointers   associated   with   each

17   corresponding finger; and

18   processing means with a steady state phase

19   during which the address pointers point to addresses

20   with mutual spacings taking account of the mutual

21   delays between the paths, and being capable of

22   receiving a current symbol on a first finger during

23   this steady state phase, storing it in the said

24   memory at the write address given by the

25   corresponding address pointer, and then incrementing

26   the address pointer, and before reception of the next

27   symbol on this first finger, being capable of reading

28   the contents of the memory stored at the read

29   addresses denoted by the other address pointers, in

30   sequence, summing these contents with the

31   corresponding symbols present on the other fingers,

32   and then storing these sums, except for the sum

33   corresponding to the last finger, at the same read

34   addresses before incrementing the pointers, the last

35   sum corresponding to the last finger being delivered

36   at the output from the combination unit.

1   9.   The receiver according to claim 8, wherein the

2   processing means has a transient phase in which the initial

3   addresses of the address pointers are all equal to the same

4   initial value, for example zero, the different fingers

5   delivering symbols progressively and at different instants,

6   and the processing means is capable of performing the same

7   processing during this transient phase as during the steady

8   state phase, and for the fingers on which the symbols are

9   present.

1   10.   The receiver according to claim 8, wherein the

2   processing means has a transient phase in which the initial

3   addresses of the address pointers are predetermined taking

4   account of offsets in the number of symbols between paths,

5   and the processing means further including an inhibition

6   functionality that prevents delivery of the last sum

7   corresponding to the last finger at the output of the

8   receiver during the transient phase.

1   11.   The receiver according to claim 8, wherein each

2   symbol is composed of several chips, wherein a rate of the

3   processing means is controlled by a clock signal with a

4   period equal to the duration of one chip divided by a

5   predetermined number, wherein the processing means extracts

6   the contents of the memory denoted by a pointer during one

7   cycle of the clock signal and increments the corresponding

8   pointer in the next cycle.

1   12. The receiver according to claim 8, wherein the

2   processing means comprises a multiplexer that adds zero to

3   the value of the symbol on the first finger before writing

4   it in memory, so as to be able to use the memory content

5   without it being initialized in advance.

1   13. The receiver according to claim 8, wherein the

2   processing means comprises a circuit to reset the memory

3   contents located at the address pointed to by the address

4   pointer of the finger that accesses this address before the

5   others to zero, when a symbol arrives on this finger.

1   14. The receiver according to claim 8, wherein

2   several groups of fingers are assigned to several

3   corresponding transmission channels, and several

4   combination units are connected to corresponding groups of

5   fingers.

1   15. The receiver according to claim 8, wherein the

2   number of symbols that can be stored in the memory is equal

3   to the number of symbols corresponding to the maximum delay

4   between the paths, plus one.

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1   16.   The receiver according to claim 8, wherein the

2   receiver is made in the form of an integrated circuit.

1   17.   The receiver according to claim 8, wherein the

2   receiver is a component part of a wireless communication

3   system.

1   18.   The receiver according to claim 17, wherein the

2   component part is a mobile cell phone.

1   19. A method of processing an incident signal within

2   a "RAKE" receiver having several fingers, comprising:

3   receiving the incident signal formed of symbols

4   output from at least one multi-path transmission channel

5   for which each path transports a delayed version of the

6   signal;

7   detecting paths for allocation to at least some

8   of the fingers; and

9   combining the information output from each finger

10 assigned to a path within a memory sized to be capable of

11 storing a number of symbols larger than the maximum delay

12 between the paths, the combining including addressing

13 locations in the memory using address pointers associated

14 with the corresponding fingers.

1   20. The method of claim 19 wherein combining includes

2   a steady state phase of:

3   using the address pointers to point to locations

4   with mutual spacings taking account of mutual delays

5   between the paths;

6   storing a current symbol received on a first

7   finger in the memory at the write address location denoted

8   by the corresponding address pointer; and

9   incrementing this address pointer.

1   21. The method of claim 20, the combining further

2   including, before reception of the next symbol on this

3   first finger:

4   extracting the contents of the memory stored at

5   the read locations denoted by all the other address

6   pointers in sequence;

7   summing the contents in sequence with the symbols

8   present on the other fingers; and

9   storing   these   sums,   except   for   the   sum

10   corresponding to the last finger, at the same read

11   locations before incrementing the pointers.

1   22. The method of claim 21 further wherein combining

2   further comprises delivering the last sum corresponding to

3   the last finger at the receiver output.

1   23. The method of claim 19 wherein combining includes

2   a transient phase of:

3   setting initial locations for the address

4   pointers to be equal to a same initial value;

5   outputting symbols from the different fingers

6   progressively and at corresponding different instants;

7   storing a current symbol received on a finger in

8   the memory at the write address location denoted by the

9   corresponding address pointer; and

10   incrementing this address pointer.

1   24. The method of claim 23, the combining further

2   including, before reception of the next symbol on this

3   first finger:

4   extracting the contents of the memory stored at

5   the read locations denoted by all the other address

6   pointers in sequence;

7   summing the contents in sequence with the symbols

8   present on the other fingers; and

9   storing these sums, except for the sum

10   corresponding to the last finger, at the same read

11   locations before incrementing the pointers.

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1   25. An integrated circuit including the RAKE receiver

2   performing the method of claim 19.

1   26. A mobile telephone device including the RAKE

2   receiver performing the method of claim 19.

1   27. A RAKE receiver that receives an incident signal

2   having a plurality of paths, comprising:

3   a plurality of fingers;

4   a memory having a plurality of addressable

5   locations storing a number of symbols larger than the

6   maximum delay between the paths;

7   a plurality of address pointers associated with

8   corresponding ones of the plurality of fingers, the address

9   pointers being set to initial locations in the memory which

10   take in account differences in a number of symbols between

11   paths of the incident signal;

12   a data handling functionality that causes a

13   current symbol received on a given finger to be stored in

14   the memory at a write location given by its corresponding

15   address pointer; and

16   a summation functionality that causes the

17   contents of the memory stored at read locations given by

18   all the address pointers corresponding to other fingers to

19   be extracted in sequence and summed, where each sequential

20   sum, except for the a last sequential sum corresponding to

21   a last finger being stored at the same read locations, and

22   wherein the last sequential sum corresponding to the last

23   finger being delivered as output from the receiver.